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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/873,801	06/04/2001	Terrence G. Vargo	013.00061	2865

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EXAMINER

YAO, SAMCHUAN CUA

ART UNIT

PAPER NUMBER

1733

DATE MAILED: 09/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/873,801

Applicant(s)

VARGO ET AL.

Examiner

Sam Chuan C. Yao

Art Unit

1733

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) 18-44 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, 8-10, and 14-17 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Bannink, Jr. et al (US 4,912,594).

With respect to claims 1-5, 10 and 17, priming and coating layer (32) or “*graphite epoxy composite*” (10) is taken to be a polymeric sheet material; and a metal-plated fabric (22) and a surface of a di-electric sheet (29) are taken to be the metal layer and non-metallic surface.

As for the limitation, “*the polymeric sheet material is the layered structure’s outermost layer*”, this limitation also reads on the “*graphite epoxy composite*” (10), because it is farthest out from a middle layer. Note according to Webster’s Encyclopedic Unabridged Dictionary of the English Language, the term “*outermost*” is define to be “*farthest out; remotest from the interior or center*”.

Note that, claim 1 does not require using a preformed polymeric sheet, hence reads on coating layer (30). In any event, it would have been obvious in the art to use a preformed coating sheet in the process taught by Bannink, Jr. et al, as such is taken to be a conventional alternative to a liquid resin coating material.

Art Unit: 1733

With respect to claims 8-9, the metal-plated fabric (i.e. metal mesh) is directly adhesively bonded onto a surface of a di-electric sheet (29).

With respect to claim 14, the recited second polymeric sheet reads on adhesive (30) disposed between a composite member (14) and a metal foil (28).

With respect to claims 15-16, see column 4 lines 49-50.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-10, 13-15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olson (US 4,352,142) in view of WO 99/64235 and Bannick, Jr. et al (US 4,912,594).

Olson, directed to a lightning protection system, substantially discloses a process recited in claims 1-4. Olson does not teach providing an outermost polymeric layer onto an aluminum foil layer of a lightning protection sandwich structure (100). However, it would have been obvious in the art, making a lightning protection sandwich structure having an aluminum covering layer (20), to apply an appliqué such as the one taught by WO '235 to the sandwich structure, because: a) WO '235 teaches applying an appliqué having a fluoropolymer backing onto an aluminum surface of an aircraft to provide decorative features and protection to the aircraft (abstract; page 1 full paragraph 1; page 3 lines 24-

Art Unit: 1733

30); and b) it is known in the art to provide a polymeric covering layer onto metallic layer of a lightning protection system as exemplified in the teachings of Bannick, Jr. et al (figures 1-2; coating layer 20 or 30 and metal layer 18 or 30).

With respect to claims 5-7, since it is old in the art to form a fluoropolymer impregnated fabric backing to enhance the characteristics of the backing, and since it is conventional in the art to form an appliqué having a resin impregnated fabric backing, these claims would have been obvious in the art.

With respect to claim 9, since it is also conventional in the art to use either a metal screen (i.e. mesh) or expanded metal foil in making a multi-layer lightning resistant composite for an aircraft, this claim would have been obvious in the art.

5. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olson (US 4,352,142), WO 99/64235 and Bannink, Jr. et al (US 4,912,594) as applied to claim 10 above, and further in view of Prohaska et al (US 4,933,060), Gardella, Jr. et al (abstract) and/or Vargo et al (US 5,696,207).

It would have been obvious in the art, motivated by the desire to enhance a fluoropolymer di-electric bonding to a metallic material, to perform the recited process steps in these claims in making the composite hybrid of Olson as such is notoriously well known in the art as exemplified in the teachings of Prohaska et al (col. 3 line 9 to col. 4 line 14), Vargo et al (col. 5 line 6 to col. 6 line 65), and/or Gardella, Jr. et al (abstract).

Art Unit: 1733

6. Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Westre et al (US 5,866,272) in view of WO 99/64235 and Bannink, Jr. et al (US 4,912,594).

With respect to claims 1-4, 8, 10, 14-17, Westre et al discloses a process of making a titanium-polymer hybrid for aircraft, the hybrid is resistant to lightning strikes, the process comprises providing a 1st resin impregnated fiber-reinforced ply (14; taken to inherently include a non-metallic surface); disposing a titanium alloy foil (10) over the 1st ply; disposing a 2nd resin impregnated fiber-reinforced ply (12) over the titanium foil; disposing another titanium alloy foil over the 2nd ply; and disposing a 3rd fiber-reinforced ply over the another titanium foil (14) (col. 2 lines 1-6; col. 3 lines 38-55; col. 7 lines 4-28; figure 1). It is further taken that, a polymeric fabric recited in claim 5 reads on a 2nd resin impregnated fiber-reinforced ply shown in figure 1).

Westre et al does not teach providing an outermost polymeric sheet onto at least one of a metallic covering layers (10) of a hybrid laminate. However, it would have been obvious in the art, making a hybrid laminate of Westre et al, the hybrid having a metallic covering layers (20), to apply an appliqué to the hybrid laminate such as the one taught by WO '235, because: WO '235 teaches applying an appliqué having a fluoropolymer backing onto a metallic surface of an aircraft to provide decorative features and protection to the aircraft (abstract; page 1 full paragraph 1; page 3 lines 24-30); and b) it is known in the art to provide a polymeric covering layer onto metallic layer of a lightning protection system as

exemplified in the teachings of Bannick, Jr. et al (figures 1-2; coating layer 20 or 30 and metal layer 18 or 30).

With respect to claims 5-7, since it is old in the art to form a fluoropolymer impregnated fabric backing to enhance the characteristics of the backing, and since it is conventional in the art to form an appliqué having a resin impregnated fabric backing, these claims would have been obvious in the art.

With respect claims 9 and 11-13, for the same reasons set forth above, these claims would have been obvious in the art.

Response to Arguments

7. Applicant's arguments filed on 09-05-03 have been fully considered but they are not persuasive.

Counsel argues that, claim 1 requires "*disposing a polymeric sheet material over the non-metallic surface ... in which the polymeric sheet material is the sheet material is the layered structure's outermost layer.*" (quotation in original). It is worth noting that, the recited polymeric sheet would appear to read on exterior epoxy composite (14) taught by Olson, because the epoxy composite is farthest from a central layer. In any event, as noted above, it would have been obvious in the art to apply a polymeric appliqué taught by WO '235 onto an aluminum foil layer of a lightning protection system taught Olson, because as noted above, WO '235 teaches applying an appliqué having a fluoropolymer backing onto an aluminum surface of an aircraft to provide decorative features and protection to the aircraft (abstract; page 1 full paragraph 1; page 3 lines 24-30); and because it

Art Unit: 1733

is known in the art to provide a polymeric covering layer onto metallic layer of a lightning protection system as exemplified in the teachings of Bannick, Jr. et al (figures 1-2; coating layer 20 or 30 and metal layer 18 or 30).

As for Counsel's arguments on page 15 regarding Westre et al, such is moot in light of a new ground of rejection. As noted above, it would have been obvious in the art, making a hybrid laminate of Westre et al, the hybrid having a metallic covering layers (20), to apply an appliqué to the hybrid laminate such as the one taught by WO '742, because: a) WO '742 teaches applying an appliqué having a fluoropolymer backing onto a metallic surface of an aircraft to provide decorative features and protection to the aircraft (abstract; page 1 full paragraph 1; page 3 lines 24-30); and b) it is known in the art to provide a polymeric covering layer onto metallic layer of a lightning protection system as exemplified in the teachings of Bannick, Jr. et al (figures 1-2; coating layer 20 or 30 and metal layer 18 or 30).

In response to Counsel's argument on page 18 last paragraph to page 19 regarding the Olson and Hoyle patents, Examiner strongly disagrees with Counsel's assertion. Contrary to Counsel's assertion, one in the art would have been motivated to a polymeric appliqué taught by Hoyle (i.e. WO '235) patent onto the metallic outermost foil of a laminate structure such as the one taught by Olson or Westre. Just like an aluminum surface or composite surface of an airplane, the outermost metallic layer of Olson's or Westre's aircraft laminate structure is reasonably expected to be exposed to damaging environmental

Art Unit: 1733

elements such as *"rain, sand, sleet, and other airborne particle damage."* (WO '235 page 1). One in the art would have been motivated to incorporate the teachings of Hoyle (i.e. WO '235) to the process taught by Olson or Westre to protect an aircraft laminate structure from damaging environmental elements. An additional incentive for applying a polymeric appliqué of Hoyle (i.e. WO '235) would have simply been to provide a decorative design on the aircraft laminate structure of either Olson or Westre. As for Counsel's argument regarding the passage in column 3 lines 50-55, Counsel would appear to be taking the passage out of context. It is true that, the outer titanium foil is used to protect the inner polymeric composite layers in a hybrid laminate. However, contrary to what Counsel appear to imply, this passage does not teach away from providing a polymeric appliqué on a hybrid laminate of Westre et al. The titanium foil is provided in the hybrid laminate in order to protect the polymeric composite from being damage during a lightning strike. It is respectfully submitted that, all components in Westre's hybrid laminate including the outer titanium foil are still present. The only difference is, the aircraft laminate structure taught by either Olson or Westre is now covered with a polymeric appliqué. Considering that a lightning has an extremely high voltage, the polymeric appliqué is not expected to alter the performance of the aircraft laminate structure of either Olson or Westre. Moreover, as noted above, it is known in the art to provide a polymeric covering layer onto metallic layer of a lightning protection system as exemplified in the

Art Unit: 1733

teachings of Bannick, Jr. et al (figures 1-2; coating layer 20 or 30 and metal layer 18 or 30).

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

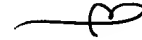
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Chuan C. Yao whose telephone number is (703) 308-4788. The examiner can normally be reached on Monday-Friday with second Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael W Ball can be reached on (703) 308-2058. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Art Unit: 1733

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.



Sam Chuan C. Yao
Primary Examiner
Art Unit 1733

Scy
09-22-03